

ABSTRACT OF THE DISCLOSURE

Methods of forming an interfacial layer on a hydrogen-passivated substrate are provided. These methods utilize atomic layer deposition techniques incorporating metal nitrate-based precursors, such as hafnium nitrate or zirconium nitrate, without introducing a hydrating agent, or oxidizing agent, such as water, during the formation of the interfacial layer. Also provided are methods of forming high-k films, by first forming an interfacial layer on the surface of a hydrogen-passivated substrate, and then depositing one, or more, high-k dielectric films.